

Translation

PATENT COOPERATION TREATY

PCT/EP2003/010551



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 8479 WO S GI-ALG	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/EP2003/010551	International filing date (day/month/year) 23 September 2003 (23.09.2003)	Priority date (day/month/year) 27 September 2002 (27.09.2002)
International Patent Classification (IPC) or national classification and IPC F16H 41/00		
Applicant ZF FRIEDRICHSHAFEN AG		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>6</u> sheets, as follows: <div style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</div> b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items: <div style="margin-left: 20px;"><input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application</div>

Date of submission of the demand 17 April 2004 (17.04.2004)	Date of completion of this report 27 December 2004 (27.12.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2003/010551

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages _____ 1-22 _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____, as originally filed/furnished
- pages* _____, as amended (together with any statement) under Article 19
- pages* _____ 1-20 _____ received by this Authority on 25 October 2004 (25.10.2004)
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages _____ 1/4-4/4 _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/10551

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-20	YES
	Claims		NO
Inventive step (IS)	Claims	1-20	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims		NO

2. Citations and explanations

This report makes reference to the following document:

D1: WO 98/45627 A (ZAHNRADFABRIK FRIEDRICHSHAFEN;
POPP CHRISTIAN (DE); ROSI HANS JOER)
15 October 1998

D1, which is considered to represent the prior art closest to the subject matter of independent claims 1, 4 and 7, discloses a process for carrying out motor vehicle automatic transmission switching steps, in particular overlapping switching steps, in which a first shift element (K1) in the form of a clutch or a brake opens and a second shift element (K2) in the form of a clutch or a brake closes during a switching step, in which in order to increase spontaneity and reduce shifting frequency of the automatic transmission a downshift from a first gear ratio (i1) into a second gear ratio (i2) is instantaneously aborted and returned to the first gear ratio (i1) if an abort criterion is recognized, wherein the abort criterion is met if a predefinable demand by a driver of the motor vehicle for an upshift is recognized.

The subject matter of claim 1 differs from the known process in that recognition of a predefinable demand by a

driver of the motor vehicle for an upshift is checked before a transmission input speed has departed from a synchronous speed of the first gear ratio by a predefined speed-related limiting value, which is established as a function of an intensity of a change in the driver's intentions. The subject matter of claim 1 is therefore novel (PCT Article 33(2) Article 33(2)).

The subject matter of claim 4 differs from the known process in that recognition of a predefinable demand by a driver of the motor vehicle for an upshift is checked before a time stage, which is started when a current transmission input speed departs from a synchronous speed of the first gear ratio, has exceeded a predefined time-related limiting value, which is established as a function of an intensity of a change in the driver's intentions. The subject matter of claim 4 is therefore novel (PCT Article 33(2)).

The subject matter of claim 7 differs from the known process in that recognition of a predefinable demand by a driver of the motor vehicle for an upshift is checked before a pressure of the disengaging first shift element has fallen below a predefined pressure-related limiting value, which is established as a function of an intensity of a change in the driver's intentions. The subject matter of claim 7 is therefore novel (PCT Article 33(2)).

The problem addressed by the present invention may therefore be considered that of increasing the spontaneity of the automatic transmission. Although speed-related/time-related/pressure-related limiting values are known *per se*, their use for a downshift is not known. And although dependence on an intensity of a change in the driver's intentions is known *per se*, use of this intensity

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in determining the limiting value in the abort criterion is not known. The solution proposed therefore involves an inventive step. Independent claims 1, 4 and 7 and dependent claims 2, 3, 5, 6 and 8-20 thus meet the requirements of PCT Article 33(2) and (3).